



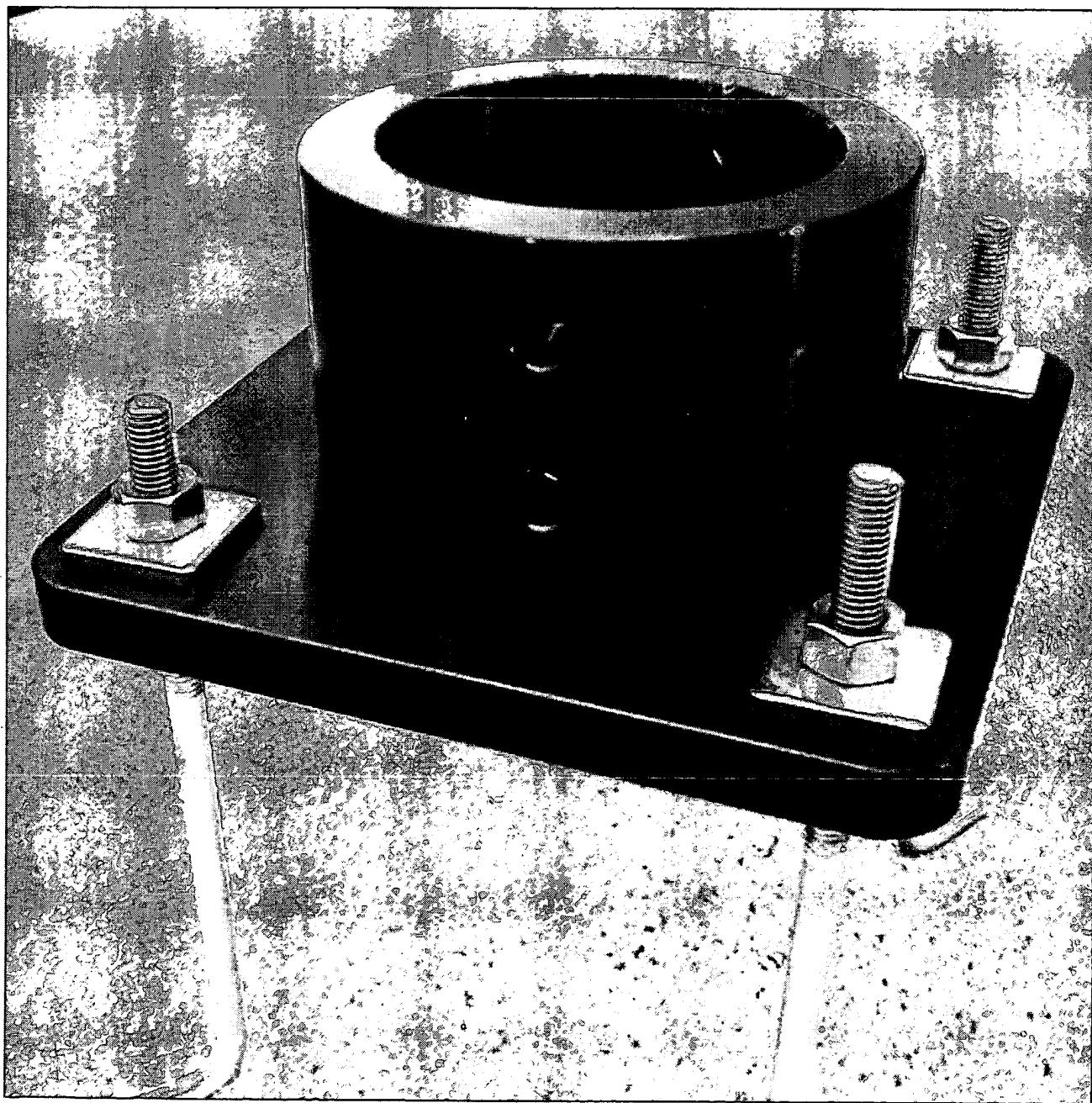
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Side view of pier extension base plate showing countersunk bolt holes for securing the pier extension.





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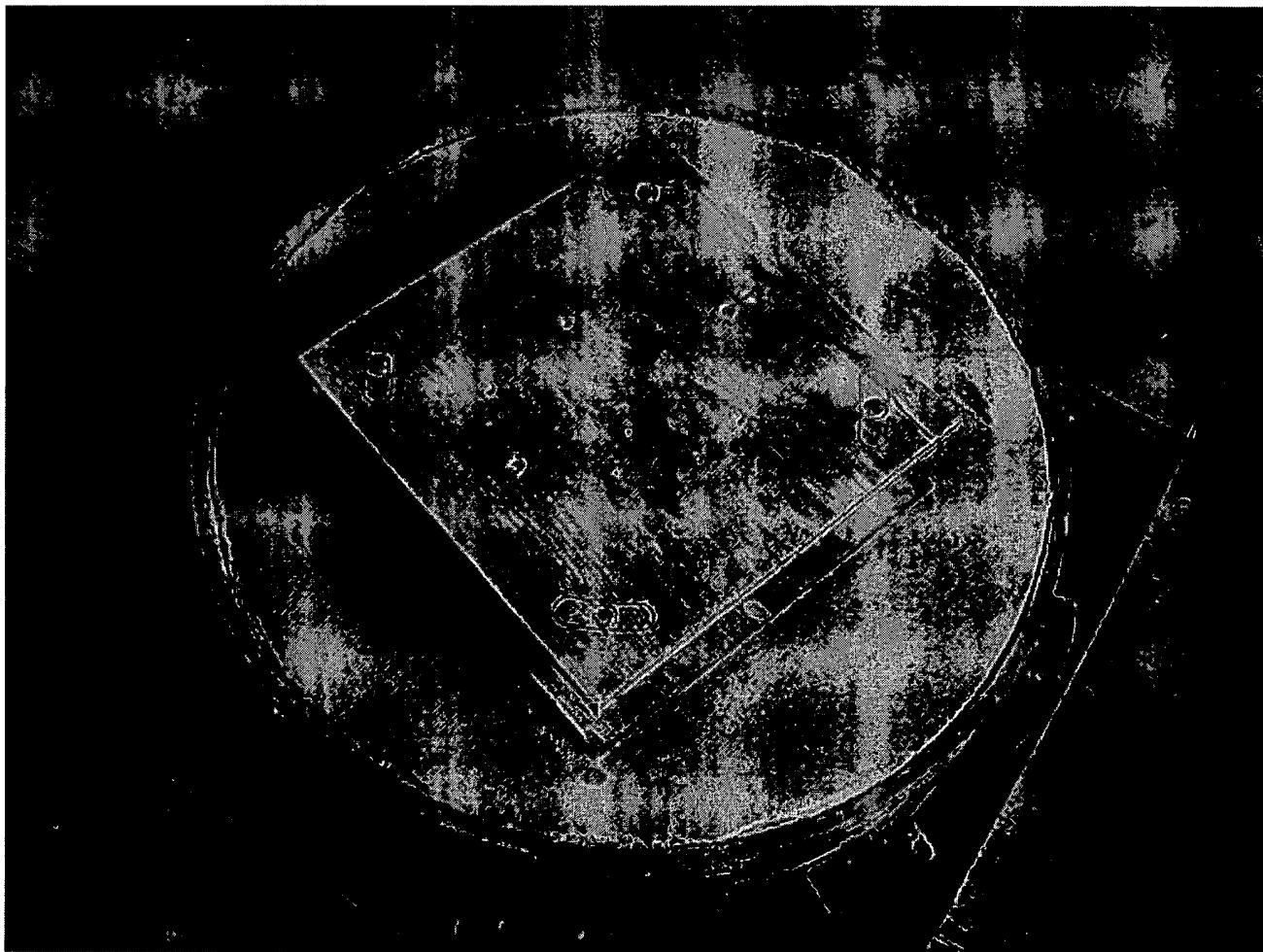
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Anchor bolts set into the top of the pier.

The four anchor bolts were placed into the top of the pier shortly after the cement was poured. The bolts were held in place by a wooden jig. The upper right edge of the jig was aligned with a celestial north/south line which was determined in advance by GPS surveying techniques. True north is to the lower right of the picture. At this site, magnetic north varies from true north by two to three degrees. The jig is a duplicate of the metal Pier Extension Base Plate which when put in place of the jig will then be aligned with the north/south axis. Inaccuracies up to seven degrees on either side of the true north/south line can be adjusted for by turning the baseplate within curvilinear oval shaped bolt holes which are machined into the baseplate. Outlines of the baseplate bolt holes are scribed onto the top surface of the jig around each bolt.





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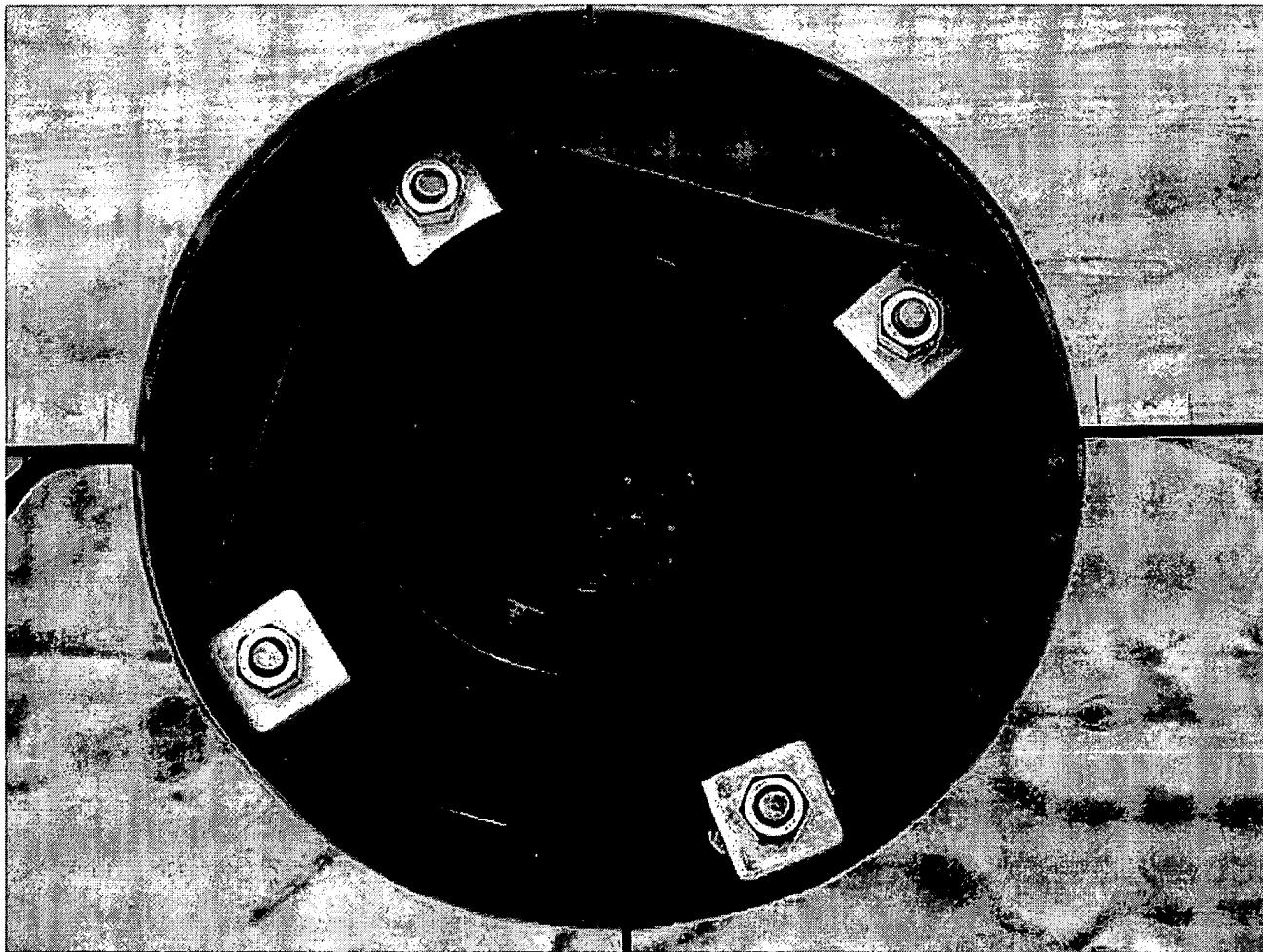
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Pier extension plate in place.

The pier extension base plate is mounted to the top of the cement pier. The top and bottom edges are aligned to true north. A cast Takahashi pier fits into the cylinder and is bolted to the base plate. The wood over the top of the pier is the false floor of the observatory. the cables will run down the pier through the cutout and will run between the false floor seen here and the true floor of the observatory a 18" below this upper floor.



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Groups search result 1 for Anchor Base Base Plate

[Cleveland City Forge](#) • Tumbuckle, clevis, eye bolt, yoke, eye nut, headed pin, rod end • www.clevelandcityforge.com
[Long-Lok Fasteners Corp.](#) • Custom-engineered self locking and self sealing bolts, nuts and screws • www.longlok.com
[IEC Levelers & Glides](#) • IEC manufactures lo-pro levelers, knob-style glides, custom feet • www.levelingmounts.com

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From: [Don1003205 \(don1003205@aol.com\)](mailto:Don1003205@don1003205@aol.com)

Search Resu

Subject: Re: Column Anchor Bolts

[View: Complete Thread \(12 artic](#)
[Original For](#)

Newsgroups: [sci.engr.civil](#)

Date: 1998/01/20

>I am detailing a **base plate** for a TS6x6x5/16" column. (80k Gravity, - 25k
>Wind). The **anchor** bolts are (4) 3/4". I want to detail it with a leveling
>**plate**
>and nuts. I assume the contractor will attach the leveling **plate** to the **anchor**
>bolts with a nut top and bottom during **anchor** bolt installation to assure
>accurate placement. Then when they set the column, the bolts will line up
>perfectly with the **anchor** bolts and they can level and then grout.
>
>1) Using this scenario, is it OK to specify STD holes in the plates? (I
>assume
>the fabricator will punch them identically) I want to spec STD holes to keep
>my
>**base plate** length and width to a minimum which will minimize my **base plate**
>thickness and to keep the contractor from burning excessively large holes in
>the **plate**.

First the use of a **base plate** will not INSURE that the **anchor** bolts are lined up. If they are not the contractor will cut an oversize hole anyway. Spec the placement of the leveling **plate** using grout rather than nuts. the column **base plate** then can set on the **base plate** WITHOUT additionall (sp) grout. this is a better appication than steel wedges or nuts. IF the **anchor** bolts have to be in line, say for an equipment **anchor** then you can install a sleeve around the bolt about 12" down from the top. This allows the bolt to be alined. the hole is grouted full as the **base plate** is set. In your appication just set the bolts and oversize the holes. the feald engineer and the contractor know the allowable edge distance and will not exceeded it

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.>2) If I am going to use a 3/4" **base plate** on a 3/16" wall thickness column,
>will there be a problem with the **plate** curling during the welding process or
>other issues?

Problem for the welding shop don't worry about it.

>3) Is it best to grout **base plates** by setting a form and using grout of fluid
>consistency or to simply shovel it under the **plate**. The **plate** dimensions are
>11"x11". It seems to me that setting a form is the easier of the two and will
>ensure full coverage. Any thoughts.

Let the contractor choose. Both work equally well. Dry pack is a little harder to install, BUT you will not get voids under the **plate** like you do sometimes with fluiil apps.

Don Troup P.E.
Prof Civil Engineer Tech
25 years field exp



Groups search result 2 for Anchor Base Base Plate

[Cleveland City Forge](#) • Turnbuckle, clevis, eye bolt, yoke, eye nut, headed pin, rod end • www.clevelandcityforge.com

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[WebRiggingSupply.com](#) • Lifting, Pulling, Towing, Stowing? You've come to the right place. • www.WebRiggingSupply.com

[Piping Technology](#) • Maintains inventory of components for pipe hanger & support assembly • www.pipingtech.com

From: Ramon Gandia (no.spam@see.signature.part)

Search Resu

Subject: Re: Tower base installation question

Newsgroups: [rec.radio.amateur.antenna](#)

Date: 1996/10/22

[View: Complete Thread \(5 artic](#)

[Original For](#)

Robert Mech wrote:

>
> I am in the process of putting in a 70 foot or so free standing tower.
> The hole for the **base** has been dug and is square shaped. The tower
> itself is triangular. Since the hole is quite large, decided to also toss
> in some concrete anchors, to hold other things down in the future
> (may not be reception related). To try and get maximum flexibility,
> planning on three sets of four anchors (enough spacing to hold down a 4x4
> post in a bracket), and four more at diagonals.

<< snip >>

Robert,

From a strength point of view, the exact center placement of the tower on the **base** is not critical. I think it should "look" right rather than be "technically" right. It is only a few inches. You might want to make the above-ground part round instead of square using some tub or container for a form.

Thus if you have a 4f x 4ft x 6 ft deep hole, the square part of the **base** should be flush with the ground where you can cover with dirt or grass, and the part that sticks maybe a foot or two above ground be round.

You should have a STEEL **base plate**, do not use Wood of any sort as it quickly rots in the cement.

It is critical to get the tower perfectly vertical. I myself like not only to hold the tower in place with temporary guy wires (retracted position) while the cement cures (1 week to 10 days before you raise the tower up), but I also like to have some adjustment for the verticalness.

In this case, the best solution is to have just three **anchor** rods come out of the concrete, with exposed threads.

You put a nut in each about 3 inches into the threads, then lockwashers, then the **base plate**, then another trio of lockwashers and finally three more nuts. By loosening the nuts and turning them, the tower can be plumbed vertical. I think this is important as it might be hard to rectify later.

You might also consider guying the very bottom section of the tower, even though it is self supporting. It adds tremendously to the strength. For a 70 footer, with antennas, I would use 1/4 or 5/17 steel wire rope 7 x 19, or perhaps better, steel cable, same size, but 7 x 7 strand. Use proper hardware and good 1/2 or 3/8 turnbuckles with CLOSED eyes or clevis ends. You need three guy anchors, and best is a buried pipe or treated log, about 4 ft into the ground. Pipe is slippery, so when you wrap the wire around the pipe, you need a pair of welded tabs on the pipe so the wire does not creep down the pipe over the years. Or drill holes and insert two bolts. Or pour some cement on it....

If you use taller guy points, you will need insulators on the guy wires, so the low ones are best for this as your tower is self supporting anyway. Happily, these guy wires can be used while the tower **base** cement is curing.

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Google Search: Anchor Base Base Plate <http://groups.google.com/groups?q=Anchor+Base+Base+Plate&hl=en&lr=>

The **anchor** rods should be about 1-inch or more galvanized rod, with a letter J on the bottom bent in so it doesn't work loose and pull out of the cement. Big blocks of cement like this crack surprisingly easily from internal stresses if you do not reinforce them. Use regular rebar to make a mesh of rods, perhaps 12 inches apart max. Tie it all together with bailing wire. The J-shaped **anchor** rods should have some sort of support so they can take the weight of the whole tower while the cement is setting up, or the lowest tower section.

Consider a hinge **base** which can be fabricated locally. It is quite handy to be able to lay the tower down.

Also, if you have a beam on the tower, I think a 20 ft scaffold along the tower is handy to be able to work on the beam, rotor, etc. Of course, this can be added later, but you should plan on it. Even 20 ft is way up when you are working on the tower, rope around your neck in case you slip, etc.

Of course, if your tower is not crank up, but is of the fixed variety, you do not need the scaffold, but then the hinge **base** is REALLY handy.

Notice that I only used 3 **anchor** rods, but heavy duty. It is all you need if its done right. **Base** should be 3/8 steel **plate**, hinged or otherwise, and basically about double the diameter of the tower. The **anchor** rods can come up outside the tower legs, to give the **base** some "spread" for strength. If your rods are on a circle with twice the diameter of the tower, then the stress on the rods is half of what it would be if the rods came out right under the tower legs.

Good luck, 73

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AL7X S/V Seven Stars |
907-443-2437 fax 907-443-2487 | where at=@ dot=period

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